Remarks/Arguments

Claims 2-23 are in the application. Claims 2, 13, 18, 22, and 23 are in independent form.

Claim rejections 35 USC § 102

Claims 18-21, and 23 stand rejected under 35 USC 102(e) as being anticipated by U.S. Pat. No. 6,828,729 to Owens ("Owens").

Applicant teaches a detector that can be used to detector either ions or electrons emitted from a target. To detect ions, a first voltage is applied to the detector to attract the ions. The ions are caused to impinge on a surface to produce electrons, which then travel into the electron detector. To detect electrons from the target, a second voltage is applied to the detector to attract the electrons, and the electrons travel into an electron detector, substantially bypassing the surface on which the ions impinge.

Owens teaches an ion detector for use in a mass spectrometer. A mass spectrometer determines the identity of an unknown ion species by accelerating the ion in an electric field, magnetic field, or combined electric and magnetic field. The trajectory of the ion is determined by the charge-to-mass ratio of the ion, and from the charge-to-mass ratio, the identity of the ion can be determined. See applicants' specification, para. [1005].

Thus, Owens teaches a method of detecting only ions, and not electrons. Owens teaches converting the ions into electrons for detection, but does not teach selectively detecting electrons, as well as ions, "from a target" as claimed. Claim 18 recites: "selectively attracting positive ions or electrons from a target using an input electrode" and "detecting using an electron detector either the electrons emitted by the impact of the positive ions from the surface or electrons selectively attracted from the target and not impacting the surface." Because Owens teaches an ion detector

used in a mass spectrometer, it does not teach a detector that can detect electrons emitted from a target and does not teach "selectively attracting positive ions or electrons from a target" and "the electrons not impacting the surface." Because Owens does not selectively detect ions or electrons, Owens does not use an input screen to selectively attract positive ions or electrons. Owens teaches instead a grounded grid before his detector. "Conductive grid or mesh 780 rests on insulated spacer 775. Grid 780 includes crossed wires (not shown) which define a grounded plane for MCP 740." Col. 6, lines 9-14. Because the grid is grounded, its voltage is not varied to attract electrons or ions.

Similarly, claim 23 recites "an input screen to which voltages can be selectively applied relative to the target so as to attract positive or negative secondary charged particles emitted from the target." Because Owens does not detect electrons from a target, it does not teach such an input screen and teaches instead a grounded grid. Col. 6, lines 9-14. Applicants submit, therefore, that Owens does not teach the elements of claims 18-21, and 23 and respectfully requests the rejection be withdrawn.

Claim rejections 35 USC § 103

Claims 2-5 stand rejected under 35 USC 103(a) as being unpatentable over JP 07-142022 to Ishitani et al. ("Ishitani").

Ishitani teaches a detector that can detector either ions or electrons. For detecting electrons, an input screen is biased to attract secondary electrons from a target. Upon collision with the input screen, the second electrons generate tertiary electrons, which are accelerated toward a scintillator photomultiplier ("SP") combination. The electrons cause the scintillator to emit light, which is

detected by the photomultiplier, which converts the photons to electrons, and then creates a cascade of electrons, which are detected at anode as an electric current.

Thus, an SP converts each electrons to photons and then back to a large number of electrons. The Examiner states that the SP is an ion-to-electron converter or an equivalent structure. In Ishitani, however, the input screen converts ions to electrons. Claim 2 recites three components: an input screen, an ion-to-electron converter, and a scintillator. The ion-to-electron converter is "positioned between the input screen and the scintillator detector" and is therefore a different structure from the input screen and from the scintillator.

Because Ishitani teaches an input screen that converts ions to electrons, there is no incentive to modify Ishitani to provide an additional ion-to-electron converter in addition the input screen, particularly an additional structure that not only converts ions to electrons, but that is "configurable in a first configuration to convert ions emitted from a target to electrons and configurable in a second configuration to pass electrons from the target through the ion-to-electron converter."

Similarly, while the Examiner states that the SP detector is an equivalent structure to an ion-to-electron converter, Ishitani already teaches using the input screen to convert ions to electrons, and Ishitani does not use the SP detector as an ion converter. If Ishitani uses the input screen to convert ions to electrons and, as the examiner says, the SP detector is equivalent to an ion-to-electron converter, there surely is no motivation to add a third structure in addition to the input screen and the SP as an ion-to-electron converter.

Applicants submit that claims 3-8 are patentable for the reasons described above with respect to parent claim 2. Moreover, with regard to claims 3 and 4, applicants submit that because

Ishitani does not teach an ion-to-electron converter separate from the input screen, it does not teach "altering one or more voltages on components of the ion-to-electron converter" when it teaches altering the voltage on the input screen. Altering the voltage on the converter performs a different function from altering the voltage on the input screen – it serves to cause the ions to impact the converter walls and the electrons to bypass the walls.

Claims 6-17 stand rejected under 35 USC 103(a) as being unpatentable over Ishitani in view of Owens. The Examiner states that Ishitani teaches all aspects of the claims except for explicitly stating that the ion-to-electron converter comprises generally parallel plates. Applicants submit that, as described above with respect to claim 2, Ishitani does not teach all the elements of claim 2. For example, it does not teach an ion-to-electron converter "positioned between the input screen and the scintillator detector." Moreover, with regard to claims 7, 16, and 20, Owens teaches in Figs. 1 and 2 a conventional multi channel plate ("MCP") detector in which round tubes 20, not parallel plates, are used.

With regard to claims 7, 11, and 15, Owens' tubes 20 are not "configurable in a second configuration to pass electrons from the target through the ion-to-electron converter" as recited in parent claim 2. Owens, as a mass spectrometer detector, teaches only detecting ions from the target, and not electrons. Owens tubes 20, which correspond to the ion-to-electron converter in the Examiner's analysis, are not configured such that "electrons pass through the ion-to-electron converter and are detected by the electron detector, the ion-to-electron converter adapted to be positioned between an input electrode and the electron detector" as described in claim 13.

Claim 22 explicitly differentiates over the references by reciting that "the ion-to-electron converter not being the input screen." The Office action did not provide further an explanation for

the rejection of claim 22.

Applicants submit that all claims are now allowable and respectfully requests reconsideration and allowance of the application.

Respectfully submitted,

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